New Frontiers Community Workshop December 5, 2008.

Questions and Answers (in presentation order)

Introduction

1.Q: When will you know the schedule for issuing the final AO?
A: After SMD decides to release the AO, it takes at least two months for concurrence/approval and notification before the AO can be released. We will announce the target release date to the community as soon as it has been determined.

Standard AO Presentation

2.Q: Can Phase B start in 2011 so we can get through development in 2016?
A: In the Draft AO schedule (Section 3), Phase B starts about 2 years after AO release. The dates in the Draft AO are what we think the New Frontiers budget can support; that includes the available year-by-year budget. Phase B starts at downselect, and the timing of this is dictated by the time it takes to conduct the Phase A concept studies followed the time it takes to conduct the downselect evaluation process. The target date for downselect and the initiation of Phase B will be in the final AO.

3.Q: If the less capable LV that I propose is not available for my mission at the appropriate time, who pays for a more capable but available LV?
A: NASA assumes the risk of procuring the LV; that is why the LV cost is outside the PI-Managed Mission Cost. The Draft AO clearly states "an intermediate class launch vehicle … will be provided as Government Furnished Equipment (GFE) at no charge to the PI-Managed Mission Cost." (Section 5.9.2)

4.Q: Is a contributed foreign launch vehicle allowed?
A: No. This Draft AO does NOT allow a contributed foreign launch vehicle. The Draft AO clearly says, "Contributed launch services cannot be proposed or considered under this AO" (Section 5.9.2).

5.Q: If the cost cap increases owing to a choice of a less capable LV or infusion of propulsion technology, does the cost of the minimum E/PO program increase?
A: The AO has been modified (Requirement 48) to make it clear that the required minimum E/PO program is based on the cost cap before any increases are applied.

6.Q: Can foreign Co-Is who don't received project funding still be Co-Is?
A: Yes. The Draft AO clearly says "A Co-Investigator (Co-I) is defined as an investigator who plays a necessary role in the proposed investigation and whose services are either funded by NASA or are contributed by his/her employer." (Section 5.4.2)

7.Q: Page limits appear to be too small for New Frontiers, owing to complexity of these larger missions.
A: We will take recommendations for increased page limits under consideration.

8.Q: Will there be another Draft AO?
A: No. The existing Draft AO will be revised as necessary to create the final AO.

9.Q: What is the meaning of "essential oversight" in Section 4.1.2?
A: The New Frontiers Program Office at Marshall Space Flight Center will oversee projects to ensure that NASA requirements are met. Some of these requirements are found in NPR 7120.5D and the New Frontiers Program quality/mission assurance document. The Program Office uses existing institutional processes and reviews to maintain cognizance of project status whenever possible, to minimize additional reporting imposed on projects. Roles and responsibilities for SMD, the program office, and the principle investigator, as well as project reporting requirements, are defined in the New Frontiers Program Plan.

10.Q: Is there any explicit or implied requirement to have a project management plan agreement with NASA Center?
A: No. Each proposal will propose its own project management team. There is no requirement for a NASA Center to be part of your project management team.

Science Focus

11.Q: Must the Trojan/Centaur mission go to both?
A: The AO has been modified (Section 2.4.5) to state the science objectives for a mission to either a Trojan, or a Centaur, or both. All three of these options are acceptable.

12.Q: Some of the mission concepts specify an even number of objectives. In those cases, what is considered a "majority of the objectives"?
A: The AO has been modified to indicate that a mission concept must address a preponderance of the science objectives. Preponderance is superiority in number or influence. The requirement to address a preponderance of the science objectives (rather than a majority) recognizes that all science objectives are not equally important. The required justification of the choice of science objectives should make clear why the set of selected science objectives addresses a preponderance of the science objectives.

You need to pick your objectives, explain them in the proposal, and justify why this set of objectives makes NASA's investment of money in the mission worthwhile. Whether you have addressed a preponderance of the objectives will be determined in one of the findings that the science peer review will provide to NASA.

13.Q: If a mission is proposed that addresses more than one of the eight mission concepts, how will science objectives be accounted for? For instance, if you fly by Venus and then go to asteroids and do something exciting at both, will the AO language permit that to count as addressing a "majority of the objectives"?
A: The Decadal Survey and the NOSSE report stated that the next New Frontiers mission should be one of these eight mission concepts. NASA will select a mission that

will "check off" one of those eight mission concepts by realizing the science goals that are important and compelling enough to get it on the list on the first place. Therefore, any proposed mission must address a preponderance of the objectives of one of the eight mission concepts.

TMC

14.Q: Are the 'factors' noted in sections 7.2.2, 7.2.3, and 7.2.4 all weighted equally within their respective areas? If not, what is the weighting?
A: There is no weighting and there is no formula. All factors are considered for categorization and selection. A weakness in any one area may be sufficient reason not to select a proposal, or a proposal may be selected with weaknesses in several areas.

15.Q: Is it a weakness to not have a Science Enhancement Option (SEO) or a Student Collaboration (SC)?)
A: No, it is not a weakness. It is neutral.

16.Q: TMC review requires detailed Basis of Estimates (BOEs) so team can verify. Where do you want these BOEs?
A: Requirement B-47 requires that BOEs be included in the cost and cost estimating methodology (Section H) of the proposal. Section H is intentionally limited to 8 pages. NASA recognizes that, at the early formulation stage of a Step 1 proposal, additional BOE data is not valuable in determining the cost risk of a proposed mission.

17.Q: Is SAIC the only contractor that is precluded from participating in writing proposals that will be submitted in response to this AO?
A: Aerospace Corporation is also precluded from participating in writing proposals that respond to this AO.

18.Q: The definition of risk ratings includes the phrase "within available resources." Does that assume that I'll use my contingencies and reserves? If I use them and am still in the box, then am I low or medium risk?
A: The phrase "within available resources" includes reserves or contingencies as available resources. So determining the risk rating of your proposed mission does assume that you will use your reserves to implement the proposed missions.

19. Q: The definition of science merit suggests that science enhancement options (SEOs) will not be evaluated.
A: The Draft AO says clearly "As these proposed activities are optional and are not included within the cost capped baseline investigation, the science enabled by SEO activities is not considered as part of the scientific merit (Form A) of the proposed investigation." (Section 5.1.6) On the other hand, NASA wants to know if a proposed SEO is worthwhile, so SEOs will be evaluated as part of scientific implementation merit and feasibility (Form B; see Section 5.1.7, Factor B-6).

We will ask the science peer review if a proposed SEO influenced the peer review's evaluation. Our experience with past AOs is that an SEO, even if it earns strengths, does not impact the overall science implementation merit and feasibility rating because it is not part of the baseline science mission. SEOs typically have a negligible impact on selection, but if the proposal is selected, then the presence of an innovative SEO could impact how the mission's science data and results are made available to the rest of the community. Knowledge of a contemplated SEO and the science peer review's findings permit us to decide whether or not to fund the SEO.

20.Q: When I go to my Phase A kickoff meeting after I am selected, will you tell me how my SEO was evaluated, and whether I have the option to use it, change it, or do something different?
A: We will tell you what peer review told us. We will discuss any directions that NASA has about the SEO. Note that because an SEO is not part of a baseline investigation, there might be negligible impact if you descope it during Phase A.

21.Q: Can a mission extension to address additional objectives be proposed as an SEO?
A: The Draft AO language is pretty open as to what can be proposed as an SEO.

International Participation

22.Q: When would an international agreement be implemented?
A: International agreements are typically not initiated until Phase B, following the final down-select. NASA tries to have them completed and signed by end of Phase B. If it is not possible to get the final agreement in place by the end of Phase B, an interim agreement is put in place.

Export Control

23.Q: Should we avoid putting export-controlled material in our proposals? This could make a proposal noncompetitive or at high risk for lack of information.
A: If you include export-controlled technical data subject to ITAR in your proposal, it must be marked with a notice to that effect (see Section 5.8.2 of the draft AO).

Performance specifications and/or basic system descriptions would not be export-controlled technical data. Export-controlled technical data is defined in §120.10 of the ITAR as follows:
(a) Technical data means, for purposes of this subchapter:
(1) Information, other than software as defined in §120.10(a)(4), which is required for the design, development, production, manufacture, assembly, operation, repair, testing, maintenance or modification of defense articles. This includes information in the form of blueprints, drawings, photographs, plans, instructions or documentation.
(2) Classified information relating to defense articles and defense services;
(3) Information covered by an invention secrecy order;
(4) Software as defined in §121.8(f) of this subchapter directly related to defense articles;

(5) This definition does not include information concerning general scientific, mathematical or engineering principles commonly taught in schools, colleges and universities or information in the public domain as defined in §120.11. It also does not include basic marketing information on function or purpose or general system descriptions of defense articles.

24.Q: Has Israel been removed from the list of proscribed countries?
A: The proscribed country list has been updated in the Federal Register; Israel is not a proscribed country under the ITAR 126.1. However, Israel is a country of missile technology concern under Part 740 of the Export Administration Regulations (EAR) and is on the NASA Designated Country List, which can be found at http://www.hq.nasa.gov/office/oer/nasaecp/DCList_10-07-08.pdf.

25.Q: One of charts talked about a Canadian exemption for ITAR. Can you provide information?
A: The Canadian exemption is found at 126.5 in the ITAR. 126.5(a) allows the temporary import and return to Canada without a license of any unclassified defense articles that originate in Canada for temporary use in the United States and return to Canada. 126.5 (b) allows the permanent and temporary export to Canada and return to the U.S. of specific items (most of Category XV, Spacecraft, is excluded) for end use in Canada by Canadian Federal or Provincial governmental authorities acting in an official capacity (see complete exemption). 126.5(c) discusses defense services that could be eligible for exemption (most of Category XV is not eligible). Please refer to the ITAR for the complete description of items and situations that meet the requirements to use the Canadian exemption.

26.Q: If a foreign entity contributes an instrument and it comes here for a test and then needs to go back to where it was built, will this be considered an export and will a license be required?
A: You might require a license to export it back to them even though it was theirs to start with. Note that ITAR covers imports as well as exports.

Launch Vehicles

27.Q: Would the addition of two solid rocket boosters qualify as being within the baseline?
A: The AO uses the terminology of "standard" or "default" launch vehicle to mean the launch vehicle that is the most capable (*i.e.,* in the highest performance range) in the intermediate class. Additional solids cannot be added to this configuration. Some of the vehicles in the lower performance ranges mentioned in the AO could be incrementally upgraded with solids but that may push them into the medium range launch vehicle category.

28. Q: Does the $60M increase on the cost cap correspond to the lowest performance ELV?

A. Yes, Section 5.9.2 of the draft AO states that the cost cap will be raised by $60M (FY 2009) if the lowest performance-range launch vehicle with a 4m fairing is used. It was assumed that this performance range is the minimum that would be required for a credible New Frontiers mission.

29. Q: Where are LVs classified?
A: The ELV Launch Services Information Summary letter, located in the Program Library, provides a table of the performance classes referred to as "lowest" (4 and 5 meter fairing), "medium" and "highest" in the AO. If further definition is required, the Launch Services Program (LSP) has developed an on-line tool to assist in determining LV performance. This tool is publicly accessible at the following web address: http://elvperf.ksc.nasa.gov. The performance information reflects figures consistent with the current NASA Launch Services (NLS) contractual commitments. However, note that by the time the New Frontiers mission 3 launches, a follow-on contract to NLS will be in place.

30. Q: What if a launch delay is due to a launch component?
A: In general, the launch contractor pays for delays caused by their execution of the launch service under the terms and conditions of the contract (launch service includes the launch vehicle (LV) and associated standard services, non-standard services (mission unique options), and engineering and analysis). Launch delay costs as a result of spacecraft or payload delays must be funded out of the PI-Managed Mission Cost. NOTE: When we say that the launch contractor pays, we mean he pays only the launch vehicle costs. In reality, these launch vehicle delay costs are relatively small compared to the "standing army" costs of the spacecraft. The spacecraft project is always responsible for these "standing army" costs.

31.Q: Aren't you counting slips within a launch window?
A: Launch slip is a complex topic with many ins and outs, but, in summary, all slips, whether within a window or past it, are subject to the terms and conditions of the contract as launch delays. Each entity is typically allotted a certain number of "grace" days after which launch vehicle costs must be paid by the entity at fault for the slip. In reality, these launch vehicle delay costs are relatively small compared to the "standing army" costs of the spacecraft. The spacecraft project is always responsible for these "standing army" costs.

32. Q: If our mission would optimally benefit from two or more independent launches, what would be the impact on the PI budget section?
A: The Draft AO supposes that NASA will provide a single launch vehicle for a New Frontiers mission. However, NASA is interested in enabling the best possible science missions within its available resources – that is the purpose of an AO. If you have a mission architecture that you think NASA would be interested in soliciting, but a change in the AO language is required, it is reasonable for you to bring it up with us and request a change in the AO. We cannot and will not make such a change without a compelling reason because it will complicate the AO as well as the evaluation and selection process.

NEPA

32.Q: Is White House approval needed for use of RHU?
A: Yes, so you need to start early. It is a significant decision to fly.

34. Q: The Draft AO requires proposals to include cost and schedule for NEPA, but the previous speaker said launch services handled this.
A: The ELV presentation included discussions of Launch Approval and NEPA. These are two separate processes: KSC is responsible for Launch Approval, and NASA Headquarters is responsible for NEPA (a.k.a. the Environmental Impact Statement).

Technology Infusion

35.Q: What percentage of cost sharing do the incentives $5M for AMBR and $15M for NEXT represent?
A: Those numbers represent roughly 50/50 cost sharing.

36.Q: What is the process for getting those costs in the proposal?
A: We will pass you on to the project team responsible for the technologies. For the Program, we are trying to give equal information to all parties. For details that would go into actual proposals, you need to talk to the team.

RHUs

37. Q: Can you give us historical costs for RHUs?
A: Past missions were charged only for the cost of plutonium - a few thousand dollars per gram. The cost of an RHU probably won't bankrupt you, but the cost of launch approval might.

Planetary Protection

38. Q: Category II requirements apply to most small bodies. Why "most"?
A: The Space Studies Board report entitled "Evaluating the Biological Potential in Samples Returned from Planetary Satellites and Small Solar System Bodies" provides a framework for determining which small bodies may merit greater than Category II protection. For some types of some carbonaceous objects, it is not clear that they have never had potential for life or prebiotic chemistry.

39. Q: Are comets unrestricted?
A: You'd have to go through the question list in the SSB report, but cometary materials are unlikely to merit restricted Earth return.

40. Q: Do we have to calculate, conservatively, the probability of contacting a body of liquid water for any of the icy satellites, or may we cite the 2000 Esposito SSB study 'Preventing the Forward Contamination of Europa'?

A: In a proposal, it is important to demonstrate an understanding of the planetary protection requirements and some of the alternative strategies that could be involved in implementing compliance with them. It is not necessary at such an early stage to provide calculations for the probability of contamination, etc. -- a detailed planetary protection implementation plan is normally developed only after selection. Citing Space Studies Board reports and other input to the proposal's discussion is generally a good idea.

41. Q: Is an export license required for shipping samples to non-US partners?
A: No. Extraterrestrial samples are not a controlled technology under ITAR or EAR. The curation facility at JSC has been shipping samples to international requestors for years.

AMMOS/SPICE/NAIF

42. Q: The Horizons database at JPL is a very convenient web interface to use. Will NAIF reduce the training required for using SPICE, to make it comparable with the ease of using Horizons?
A: Horizons has a client-server architecture, with access to a limited data set and a "compute engine" that responds to requests submitted by the user. This allows a simple user interface. By contrast, SPICE is designed to work in local, user-built applications. It does not require an Internet connection to operate; it can be used for batch processing as well as ad-hoc tasks; it has access to a substantially larger data set; and it allows the user much more flexibility. Consequently, SPICE has a steeper learning curve than Horizons. That said, the SPICE developers strive constantly to make SPICE easier to use through tutorials, programming lessons, annual training classes, and an extensive tool kit. A brief depiction of a prototype tool named GEOCALC can be found in the NAIF tutorial "43_spice_development" available at http://naif.jpl.nasa.gov/naif/tutorials.html.

EPO

43.Q: In a recent site visit we were provided an overview of NASA's E/PO framework and SMD's E/PO program. This information did not address our concerns about how to develop our E/PO plan in Step 2. What does SMD want to see in terms of the rationale for our plan in Step 2 and the activities and products we propose to develop?
A: Because many products have been developed, SMD would like to make sure there is not a duplication of efforts and that there is an indentified audience for products and activities. The proposal should demonstrate how you determined the need or desire for your proposed products. Please refer to the **Explanatory Guide to SMD E/PO Evaluation Factors, Version 3** in the program library as well as **NASA Education Strategic Coordination Framework: A Portfolio Approach**

44.Q: Is it acceptable to do EPO just in phase C/D (or all at the end, for example)?
A: In Phase-A we want your plan; that includes the development and testing leading to products that you are proposing. We also want to see how E/PO will use

the data that your mission collects. Therefore your EPO funding profile should extend into Phase E.

45.Q: One of our people responded to the overarching NASA education goals of Inspire, Engage etc. When we went to write up, it led us down a path and that ended up not being sufficient..
A: The **Explanatory Guide to SMD E/PO Evaluation Factors, Version 3** clarifies the criteria on which E/PO is evaluated and specifically addresses SMD E/PO evaluation criteria as well as NASA's Office of Education.